Lecture 8

Mental Accounting

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PS4168: Economic Psychology

Mental Accounting

https://www.youtube.com/embed/7hx4gdlfamo?si=dC8QdP4gfdpUXVp5

Overview

- Mental Accounting (background)
- Theory Behind Mental Accounting
- Key Concepts
- In-class Activities

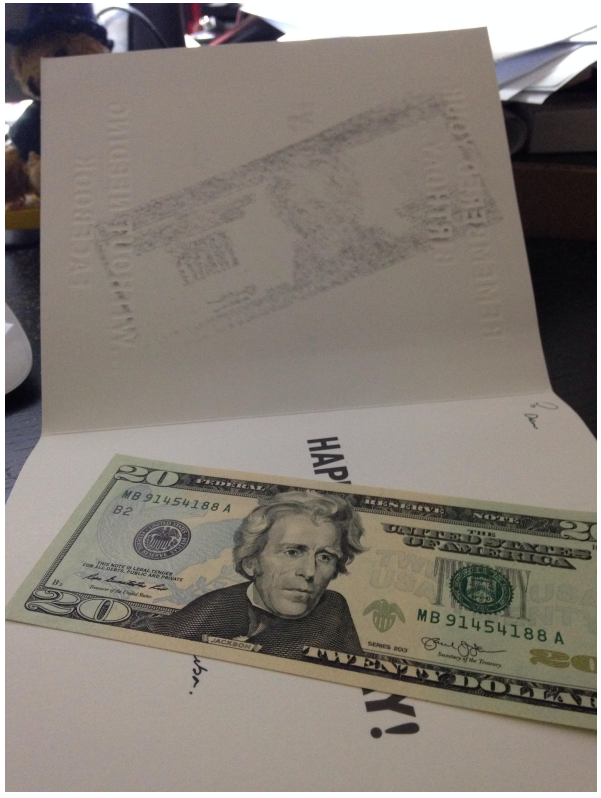
Recap on last week!

- What is the endowment effect?
- Any examples of the endowment effect from your own lives?
- What is Coase Theorem?
  - Or what are the implications of Coase Theorem?

Mental Accounting

Receiving Money

- Imagine your grandmother gives you some money to buy something for yourself...
- What would you do with the money?
  - Pool it with the rest of your money?
  - Keep it and get something special?



Mental Accounting

- What is Mental Accounting?

Mental Accounting

- What is Mental ***Accounting***?
- Thaler (2003) describes accounting as:
  - "*the system of recording and summarizing business and financial transactions in books, and analyzing, verifying, and reporting the results*"

Mental Accounting

- What is ***Mental*** Accounting?
- Individuals and households also need to *record, summarize, analyze, and report the results of transactions and other financial events*
- They do so for reasons similar to those that motivate organizations to use managerial accounting: to keep trace of where their money is going, and to keep spending under control
- Mental accounting is a description of individuals do these things.

Mental Accounting and Prospect Theory

The Value Function (again)

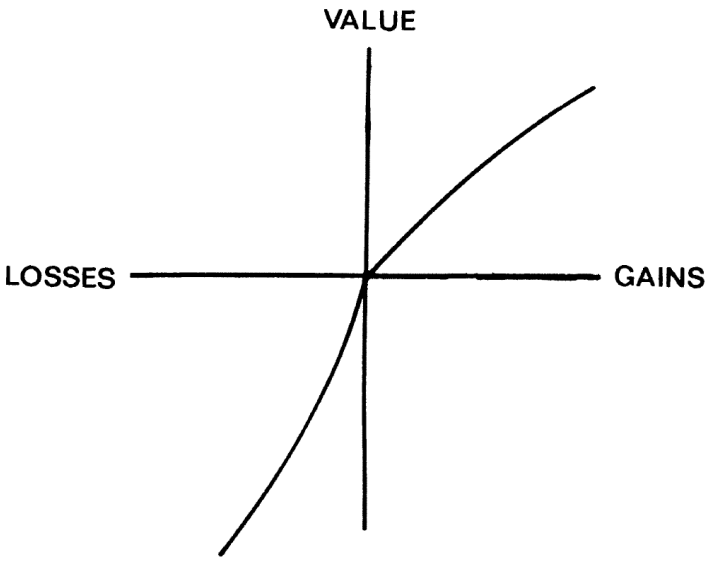


FIGURE 3.—A hypothetical value function.

Figure 1: mental accounting

(Kahneman & Tversky, 1979, p. 279)

The Value Function (revisited)

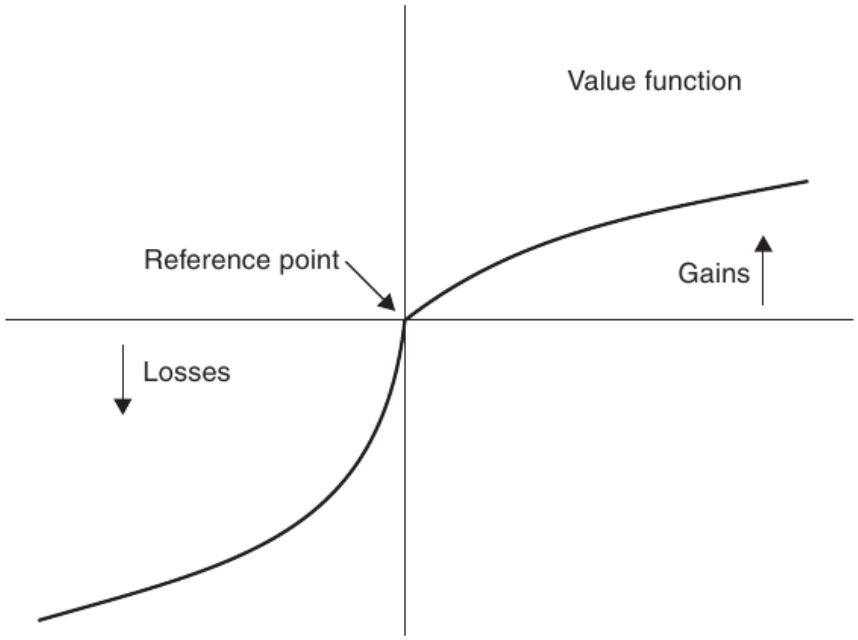


Figure 2: mental accounting

(Camerer, Loewenstein, & Rabin, 2003, p. 636)

The Value Function (revisited)

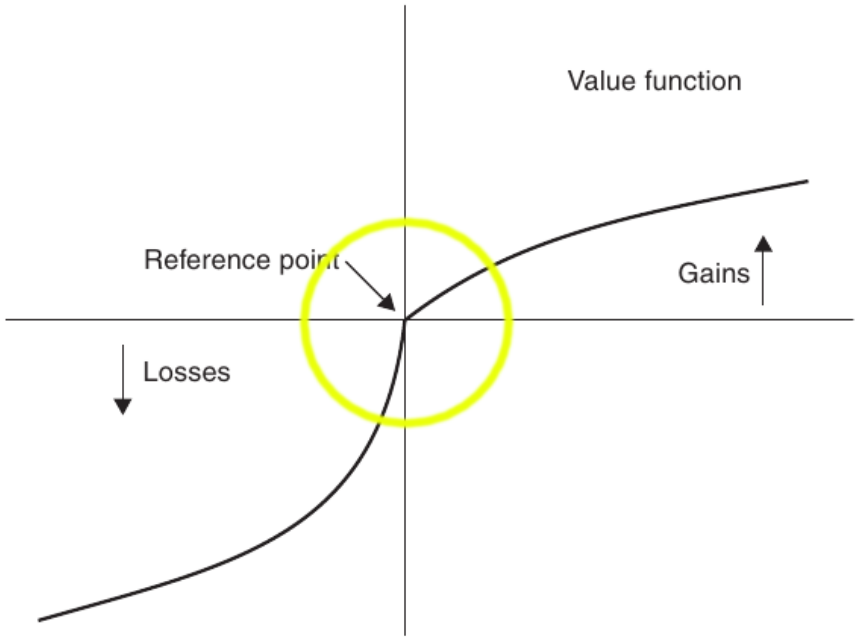
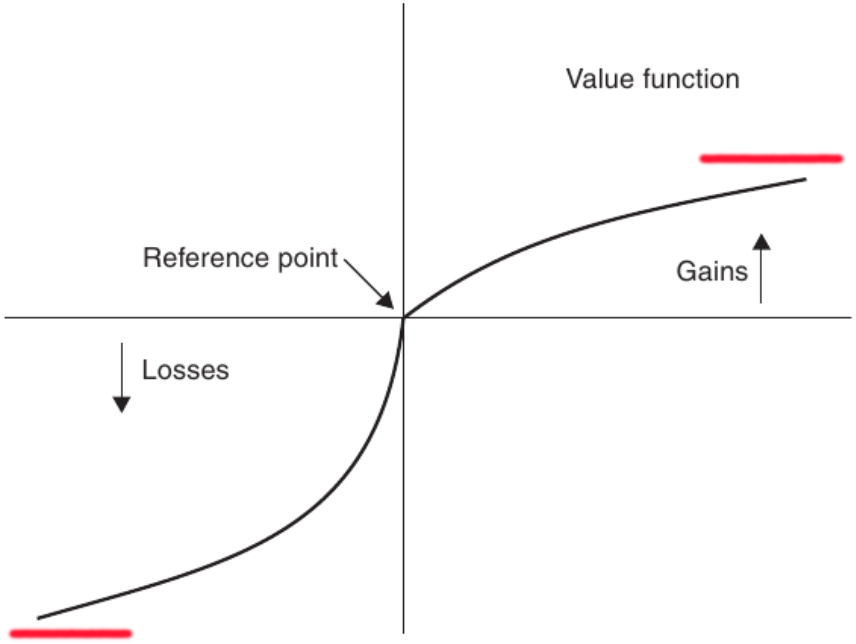


Figure 3: mental accounting

(Camerer et al., 2003, p. 636)

The Value Function (revisited)



(Camerer et al., 2003, p. 636)

The Value Function and Mental Accounting (1)

- The value function is defined over gains and losses relative to some ***reference point***
  - This reference point is not fixed
- The focus on changes, rather than wealth levels as in expected utility theory, reflects the ***piecemeal nature of mental accounting***.
- Transactions are often evaluated one at a time, rather than in conjunction with everything else

Reference Point

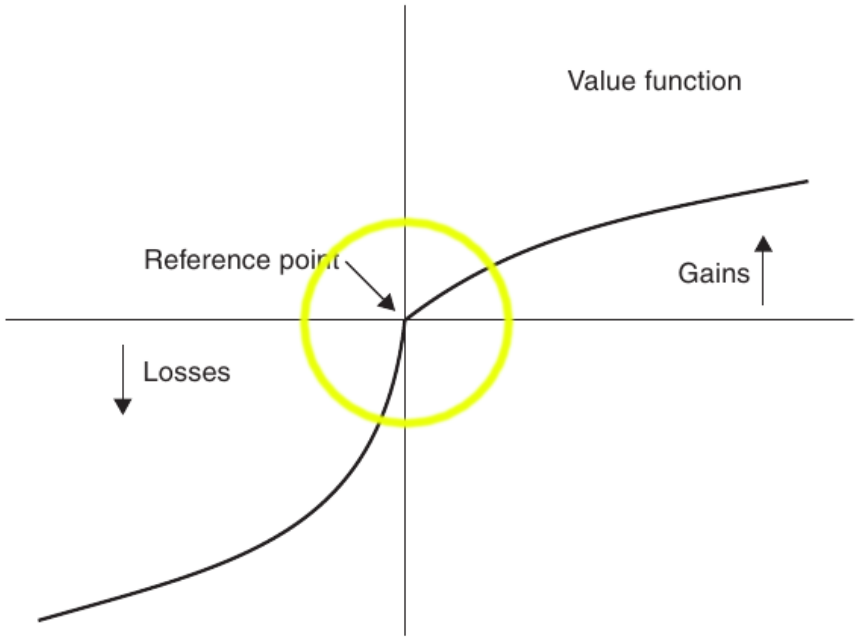


Figure 4: mental accounting

The Value Function and Mental Accounting (2)

- Both the gain and loss functions display ***diminishing sensitivity***
- The gain function is **concave** and the loss function is **convex**
- the difference between $\$10$ and $\$20$ seems bigger than the difference between $\$1000$ and $\$1010$
  - (irrespective of the sign)
  - (the Weber-Fechner law)

Diminishing Sensitivity

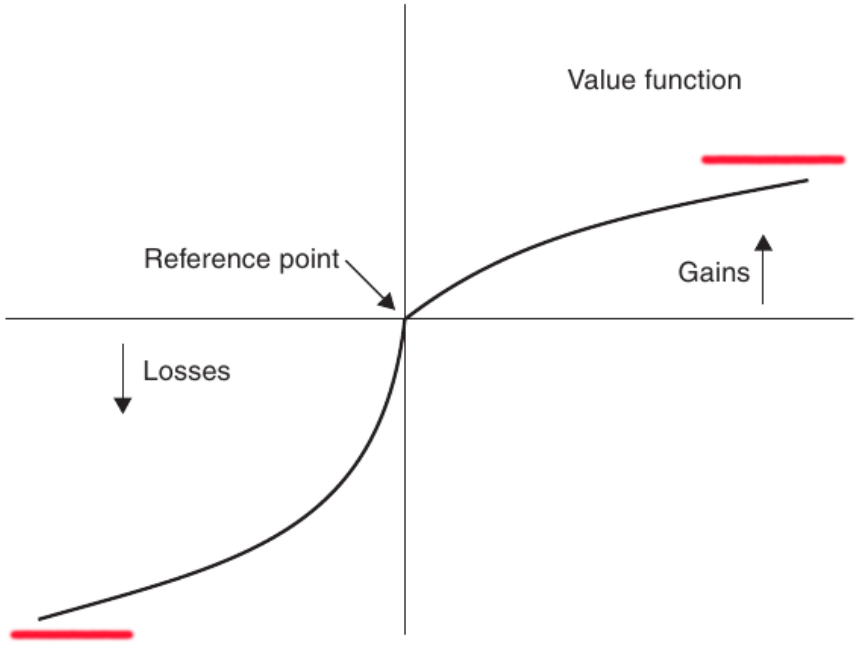
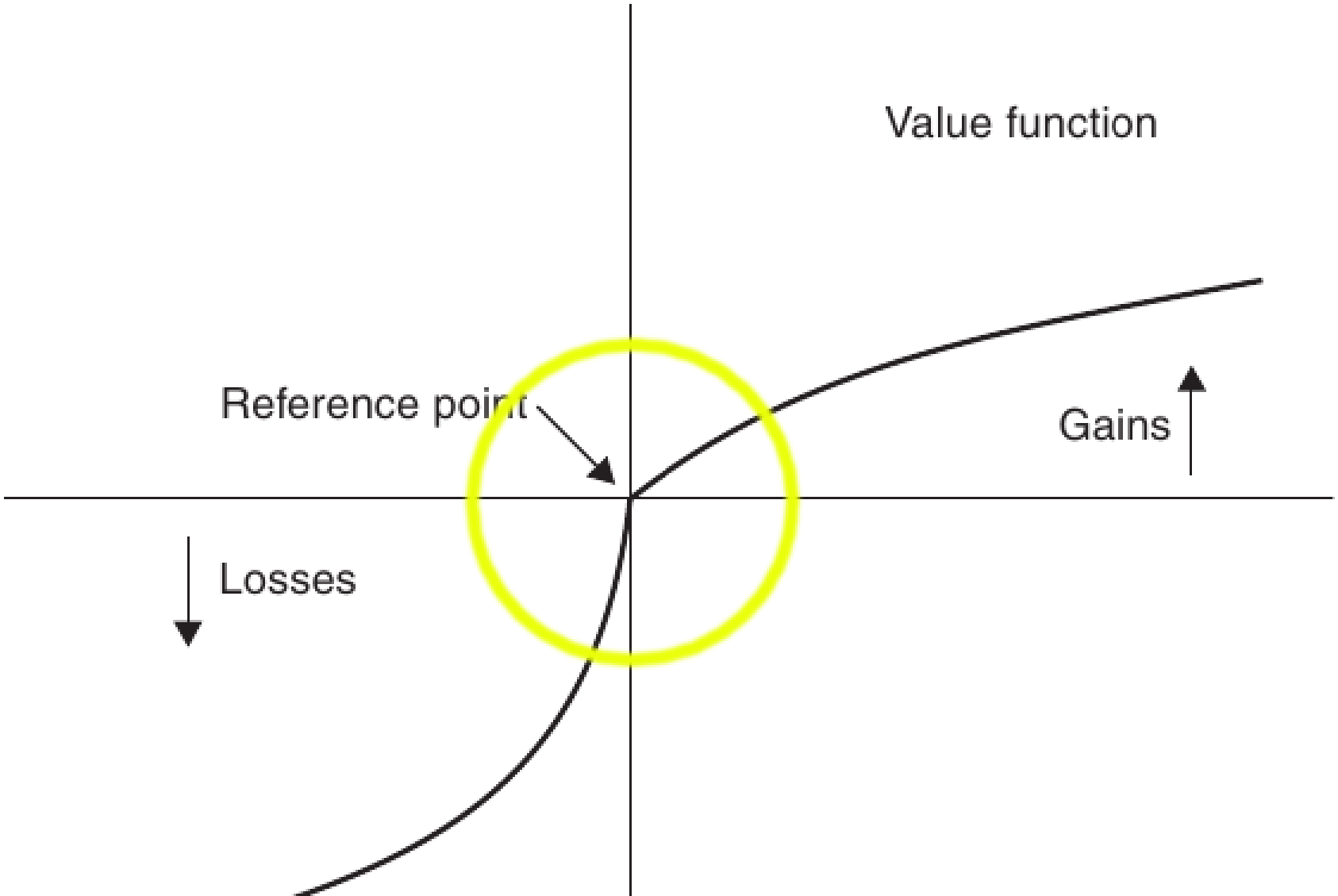


Figure 5: mental accounting

The Value Function and Mental Accounting (3)

- ***Loss-aversion***
- Losing $\$100$ hurts more than gaining $\$100$ yields pleasure:
- $v(x) < -v(-x)$
- $v(x) < |v(-x)|$
- The influence of loss aversion on mental accounting is enormous

Loss aversion



Components of Mental Accounting

Components of Mental Accounting

- Evaluating
- Categorisation
- Balancing (Thaler, 2003)

Evaluating

- How outcomes are perceived and experienced, and how decisions are made and subsequently evaluated.
  - The accounting system provides the inputs to do cost—benefit analyses (both before and after decision)
- The consumer's choice can be understood by incorporating the value of the "deal" (termed *transaction utility*) into the purchase decision calculus. (Thaler, 2003)

Evaluating

"A friend of mine was once shopping for a quilted bedspread. She went to a department store and was pleased to find a model she liked on sale. The spreads came in three sizes: double, queen and king. The usual prices for these quilts were $\$200$, $\$250$ *and* $\$300$ *respectively, but during the sale they were all priced at only* $\$150$. *My friend bought the king-size quilt and was quite pleased with her purchase, though the quilt did hang a bit over the sides of her double bed" (taken from Thaler, 2003, p. 75)*

Categorisation

- Assignment of activities to specific *accounts*
  - Both **sources** and **uses** of funds are labeled in real and mental accounting systems
- Expenditures grouped into categories (housing, food, etc.)
  - Spending can be constrained by implicit or explicit budgets
- Funds to spend are also labeled, both as flows (regular income versus windfalls) and as stocks (cash on hand, home equity, pension wealth, etc.) (Thaler, 2003)

Categorisation

"A few years ago I gave a talk to a group of executives in Switzerland. After the conference my wife and I spent a week visiting the area. At that time the Swiss franc was at an all-time high relative to the US dollar, so the usual high prices in Switzerland were astronomical. My wife and I comforted ourselves that I had received a fee for the talk that would easily cover the outrageous prices for hotels and meals. Had I received the same fee a week earlier for a talk in New York though, the vacation would have been much less enjoyable" (taken from Thaler, 2003, p. 75)

Categorisation

"A former colleague of mine, a professor of finance, prides himself on being a thoroughly rational man. Long ago he adopted a clever strategy to deal with life's misfortunes. At the beginning of each year he establishes a target donation to the local United Way charity. Then, if anything untoward happens to him during the year, for example an undeserved speeding ticket, he simply deducts this loss from the United Way account. He thinks of it as an insurance policy against small annoyances" (taken from Thaler, 2003, p. 75)

Balancing

- Frequency with which accounts are evaluated
  - **choice bracketing** (Read, Loewenstein, Rabin, Keren, & Laibson, 2000)
- Accounts can be balanced daily, weekly, yearly, and so on
  - defined narrowly or broadly
- A well-known song
  - "never count your money while you're sitting at the table"
  - Excellent advice, in poker as well as in other situations involving decision making under uncertainty (such as investing).
- Balancing also involves opening and closing of mental accounts

(Thaler, 2003)

Accounting vs Mental Accounting

- Mental accounting rules not neutral
- Attractiveness of choices influenced by:
  - Which category a purchase is assigned to
  - Combining outcomes with others in that category
  - Frequency the 'books' are 'balanced'
- Mental accounting violates the economic notion of *fungibility*
  - (units are interchangeable)

Decision Frames

Decision Frames

- Framing of outcomes ('outcome frames' Kahneman & Tversky, 2000; 'entries' Thaler, 2003)
  - Minimal account
    - only the differences between the two options (disregarding all their common features)
  - Topical account
    - consequences of possible choices to a reference level that is determined by the context within which the decision arises
  - Comprehensive account
    - all (other) factors including current wealth, future earnings, possible outcomes of other probabilistic holdings etc.

Decision Frames

- Economic theory generally assumes that people make decisions using the comprehensive account
- ***but***

Decision Frames (left)

- Imagine that you are about to purchase a jacket for €125 and a calculator for €15. The calculator salesman informs you that the calculator you wish to buy is on sale for €10 at the other branch of the store, located 20 minutes drive away. Would you make the trip to the other store? (Tversky & Kahneman, 1981, p. 459)

Decision Frames (right)

- Imagine that you are about to purchase a jacket for €15 and a calculator for €125. The calculator salesman informs you that the calculator you wish to buy is on sale for €120 at the other branch of the store, located 20 minutes drive away. Would you make the trip to the other store? (Tversky & Kahneman, 1981, p. 459)

Decision Frames

- Most people will drive when the item costs €15 but not €125 (Moon, Keasey, & Duxbury, 1999; Ranyard, 2018; Thaler, 2003; Tversky & Kahneman, 1981)
- Minimal account:
  - Driving to save €5
- Comprehensive account:
  - W^* = Existing wealth + jacket + calculator − €140
    - W^* + €5
  - *versus*
    - utility of W^* + 20mins
- Topical account: ***piecemeal***

Recap activity

- Individually or in groups
  - List the three key components of mental accounting
  - Revise key elements of the value function
  - Identify different mental accounts that you use

Recap

- Three key components of mental accounting:
  - Evaluating
  - Categorisation
  - Balancing
- Key elements of the value function:
  - Loss aversion
  - Gain function is **concave**
  - Loss function is **convex**
  - Diminishing sensitivity
  - Reference point

Hedonic Framing

- (Maximise pleasure/minimise pain)
- Individually/In groups:
  - How should joint outcomes be evaluated to maximise utility?
  - Use your knowledge of the value function:
    - Shape of gain function vs loss function
    - Diminishing sensitivity
    - Loss aversion

Principles of Hedonic Framing

1. Segregate gains (because the gain function is concave)
2. Integrate losses (because the loss function is convex)
3. Integrate smaller losses with larger gains (to offset loss aversion)
4. Segregate small gains (silver linings) from larger losses (because the gain function is steepest at the origin, the utility of a small gain can exceed the utility of slightly reducing a large loss) (Thaler, 2003, p. 79)

- Application of these principles in marketing?
  - rebate *vs* temporary price reduction

Hedonic Framing and Mental Accounting

- Do people apply these principles?
  - Do people edit/parse multiple outcomes "optimally"?
    - ***Hedonic Editing***
- Hedonic Editing as the application of the following rule:
  - $$v(x\&y) = Max[v(x+y), v(x)+v(y)]$$
- But in the case of the jacket:
  - $\$5$ dollar gain ...
    - $5 \times \$1$ gain?

Hedonic Editing Hypothesis

- Thaler & Johnson (1990):
  - two specified financial outcomes:
  - e.g., a gain/loss of $\$30$ followed by a loss/gain of $\$9$
  - who would be happier, someone who had these two events occur on the same day, or a week or two apart?
- Predictions?
  - Segregate Gains
  - Integrate losses

Hedonic Editing Hypothesis: Results

- Participants viewed segregation of Gains as optimal
- Participants also viewed segregation of Losses as optimal
  - No clear reason why
    - Losses cannot be "*combined*"?

Hedonic Framing and Mental Accounting

- The rules of hedonic framing are good descriptions of the way people would ***like*** to have the world organized (many small gains including silver linings; losses avoided if possible but otherwise combined)
- People will also actively parse outcomes consistent with these rules, **with the exception of multiple losses**
- Implications:
  - Mental accounting should be as hedonically efficient as possible
    - Opportunities to combine losses with larger gains will be exploited wherever feasible
  - Loss aversion is even more important than the prospect theory value function would suggest (Thaler, 2003, p. 81)

Mental Accounting Decision-Making

- Two kinds of utility from a purchase:
  - Acquisition Utility
  - Transaction Utility

Getting a Cold Beer

Figure 7: mental accounting

(taken from Thaler, 1985)

Getting a Cold Beer (left)

Figure 8: mental accounting

You are lying on the beach on a hot day. All you have to drink is ice water. For the last hour you have been thinking about how much you would enjoy a nice cold bottle of your favorite brand of beer.

(taken from Thaler, 1985)

Getting a Cold Beer (left)

- What price do you tell him?

A companion gets up to go make a phone call and offers to bring back a beer from the only nearby place where beer is sold a fancy resort hotel. He says that the beer might be expensive and so asks how much you are willing to pay for the beer. He says that he will buy the beer if it costs as much or less than the price you state. But if it costs more than the price you state he will not buy it. You trust your friend, and there is no possibility of bargaining with the bartender.

Getting a Cold Beer (right)

Figure 9: mental accounting

You are lying on the beach on a hot day. All you have to drink is ice water. For the last hour you have been thinking about how much you would enjoy a nice cold bottle of your favorite brand of beer.

Getting a Cold Beer (right)

Figure 10: mental accounting

- What price do you tell him?

A companion gets up to go make a phone call and offers to bring back a beer from the only nearby place where beer is sold a small, run-down grocery store. He says that the beer might be expensive and so asks how much you are willing to pay for the beer. He says that he will buy the beer if it costs as much or less than the price you state. But if it costs more than the price you state he will not buy it. You trust your friend, and there is no possibility of bargaining with the store owner.

Getting a Cold Beer

- Our results?
- Thaler's (1985) results
  - $Md_{\text{resort}} = \$2.65$
  - $Md_{\text{store}} = \$1.50$
- People are willing to pay more for the beer from the resort
  - The reference price in that context is higher
- This effect cannot be accommodated in a standard economic model:
  - Consumption experience is the same in either case
  - Place of purchase should be irrelevant
- ***Transaction Utility***: difference beetween amount paid and *reference price*

Mental Accounting Decision-Making

- Acquisition Utility
  - Measure of the value of the good obtained relative to its price
  - Similar to the economic concept of consumer surplus
  - Value the consumer would place on receiving the good as a gift, minus the price paid.
- Transaction Utility
  - Perceived value of the "*deal*"
  - Difference between the amount paid and the 'reference price' for the good
    - (the regular price that the consumer expects to pay for this product) (Thaler, 2003, pp. 81–82)

Opening and Closing Accounts

Opening and Closing Accounts

- A trader buys 100 shares of stock at $\$10$ a share
  - Initial worth of investment $= \$1000$
    - Value will go up or down with the price of the stock
  - Changes in price are '*paper*' gains/losses
    - Until stock is sold $\rightarrow$ '*realised*' gain or loss
- Realised loss is more painful than a paper loss
  - Selling stock $\rightarrow$ realised losses/gains are 'declared'
    - To Tax authorities
    - To investor (and spouse)

Opening and Closing Accounts

- Closing accounts at a loss is painful
  - predictions?
  - People will be reluctant to sell securities that have declined in value

Opening and Closing Accounts

- Suppose an investor needs to raise some cash
  - Must choose between two stocks to sell
    - one of which has increased in value
    - one of which has decreased
- Which should she sell?
  - Mental accounting favors selling the winner (Shefrin & Statman, 1985)
  - Rational analysis favors selling the loser (Odean, 1998)

Opening and Closing Accounts

- Odean (1998) finds strong support for the mental accounting prediction
  - Using a data set that tracked the trades of investors using a large discount brokerage firm
  - Investors were more likely to sell one of their stocks that had increased in value than one of their stocks that had decreased
- Other evidence from *selective* reporting in quarterly reports (Thaler, 2003)

Advance Purchases, Sunk Costs, Payment Depreciation

KnockanStockan

Cancelled Flight

Stansted (actual footage)

https://x.com/jsjallen/status/1022994438744891394?s=20

Missing the Festival

- Cost becomes a Loss
  - Losses are aversive
    - Sunk costs?
- Thaler (1980, 2003)
  - Going to a basketball game in a blizzard

Advance Purchase

- Consider paying $100 for two tickets to a basketball game to be held in a month's time
- Tickets at *reference price* (transaction utility is Zero)
- An account is opened at the point at which the tickets are purchased
  - Negative balance of $100
  - Once the date of the game comes and the game is attended, the account can be closed
- If the game is missed (due to blizzard)
  - account is closed at a loss of $100
- Why does the prior expenditure (now a sunk cost) makes someone more willing to go to the game in a blizzard?

Evaluating Purchases

- Lost ticket vs Lost equivalent sum of money (Heath, 1995; Kahneman & Tversky, 2000; Thaler, 2003)
- Suppose you buy a pair of shoes
  - Perfectly comfortable in the shop
    - First day you wear them they hurt
    - A few days later $\rightarrow$ try again $\rightarrow$ still hurt (even more)
- Predictions?

Painful Shoes

1. The more you paid for the shoes, the more times you will try to wear them. (This choice may be rational, especially if they have to be replaced with another expensive pair)
2. Eventually you stop wearing the shoes, but you do not throw them away. The more you paid for the shoes, the longer they sit in the back of your closet before you throw them away. (This behavior cannot be rational unless expensive shoes take up less space)
3. At some point, you throw the shoes away, regardless of what they cost, the payment having been fully "depreciated." (Thaler, 2003, p. 84)

Wine


RÉCOLTE 1983
Grand Vin de Léoville
du Marquis de Las Cases
SAINT-JULIEN
APPELLATION SAINT-JULIEN CONTROLÉE
MIS EN BOUTEILLE AU CHATEAU
PRODUCE OF FRANCE
CHATEAU & ESTATE

Wine

Suppose you buy a case of Bordeaux futures at $400 a case. The wine will retail at about $500 a case when it is shipped. You do not intend to start drinking this wine for a decade. At the time that you acquire this wine which statement more accurately captures your feelings?

- I feel like I just spent $400, much as I would feel if I spent $400 on a weekend getaway
- I feel like I made a $400 investment that I will gradually consume after a period of years
- I feel like I just saved $100, the difference between what the futures cost and what the wine will sell for when delivered.

Wine: Results

- I feel like I made a $400 investment that I will gradually consume after a period of years
- Initial purchase is viewed as an investment
  - Later, wine is '*free*'
  - "Invest Now, Drink Later, Spend Never" <(Shafir & Thaler, 1998)
- Expensive hobbie becomes 'free'
- Similar Examples?

Payment Decoupling

- Prepayment separates or "decouples" the purchase from the consumption (Gourville & Soman, 1998; Prelec & Loewenstein, 1998; Thaler, 2003, p. 86)
- Fixed price 'all inclusive' holiday resorts
- Set menu
- Mobile phone price plans?
- Car vs Public Transport

Mental Accounting

Mental Accounting:

- Evaluating
- Balancing
- Categorisation:
  - Budgeting
  - Choice bracketing
  - Violations of Fungibility
  - Self control/gift giving

In-Class Activity

In-class Activity

- In groups:
  - List as many different "Mental Accounts" you can think of
    - Types of Income
    - Types of Expenditure
    - Type of 'storage'
  - Identify practical applications of the content covered:
    - In everyday life of the individual
    - For Businesses

References

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